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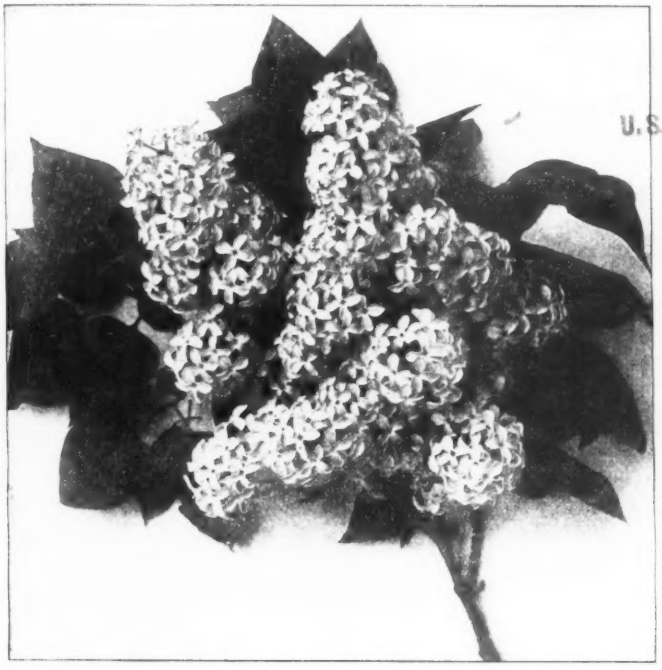
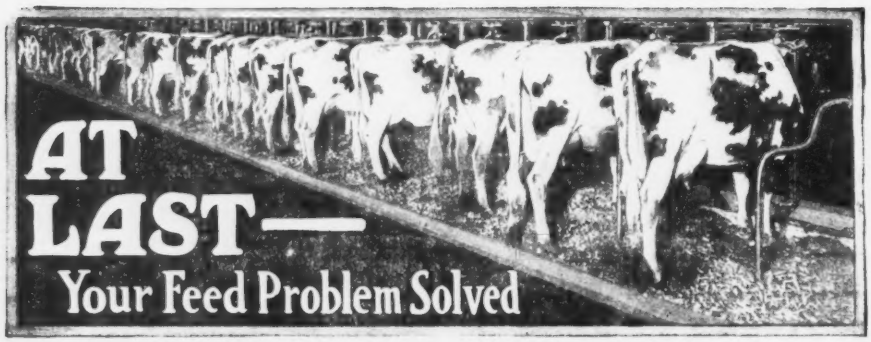
THE CORNELL COUNTRYMAN



THE SEED CORN SITUATION — E. G. MONTGOMERY
LABOR-SAVING FARM MACHINERY — A. D. MOREHOUSE
KEEPING MILK COOL — H. E. ROSS

MAY



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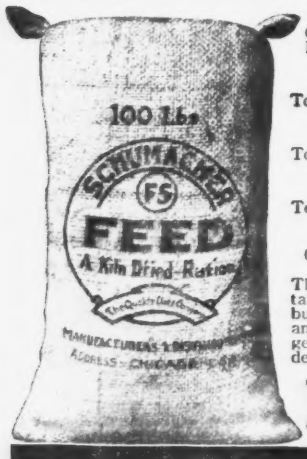

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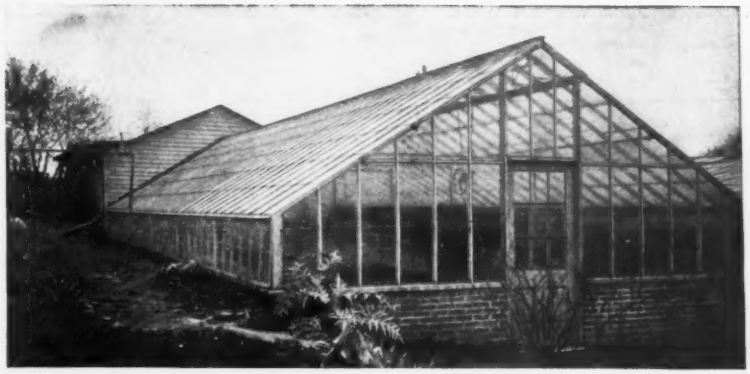

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Contents

May, 1918

The Seed Corn Situation
E. G. Montgomery 453

Marketing New York's Surplus Poultry
Earl W. Benjamin 456

Keeping Milk Cool - *H. E. Ross* 457

Labor-Saving Farm Machinery
Alanson D. Morehouse 459

To the Red Bird
William P. Alexander 462

Farming in England *David Lumsden* 463

Dairy Products, Pure and Unadulterated
T. J. McInery 466

Hooverising the Woodlot
J. B. Bentley 467

The Good Blacksmith and the Horse
Henry Asmus 469

The Life of a Cow Tester
F. A. Carroll 471

The Farm Home - - - - - - 474

Editorials - - - - - - - - 476

Campus Notes - - - - - - 478

Former Student Notes - - - - 479

When tillage begins, other arts follow. The farmers, therefore, are the founders of human civilization

—DANIEL WEBSTER

THE CORNELL COUNTRYMAN

Vol. XV ITHACA, N. Y., MAY, 1918 No. 8

The Seed Corn Situation

By E. G. MONTGOMERY

Professor of Farm Crops at Cornell University

THE seed corn situation in the United States the present year is most unusual. The unusualness is due to a number of combinations of causes beginning with the planting season of 1917 when the spring was very late through all the northern half of the United States, resulting in a very late planting. This was followed by a cool, wet summer, and an especially large rainfall during the ripening period in October. This prevented the proper ripening of corn, even when it had been planted in good season. The result was that when husking time came, not more than twenty to forty per cent of the corn north of central Ohio was considered as sound and mature. But even the corn that was considered mature had a high per cent of moisture, and there was no favorable drying weather during November. If this had been all the trouble, however, there woud have been plenty of corn for seed purposes.

The month of December was the coldest on record. Agronomists in a number of the states, fearing that the hard freeze had injured the seed corn, began making germination tests the last week of December, and it was at once discovered that even carefully preserved seed corn in many cases was entirely worthless. The two long periods of hard freezing weather in December effectively killed the germinating power of practically all corn that was not exceptionally dry.

During the month of January, surveys were made in practically all the corn growing states to find out the exact situation in regard to seed corn and find, if possible, sources of seed. The result of these surveys showed that there was very little corn that would grow north of a line running from central Ohio westward through central Iowa. Those who had good seed corn began asking $10.00 to $15.00 a bushel for it all through the western states, and even up to the present time in some of the northern sections, seed corn is still held at $15 a bushel. To try to remedy the situation many agencies in practically every state were organized during January, nearly all of them attempting to import corn from other regions if it was possible to secure it there. The Department of Agriculture at Washington put a large circulating fund into the field, to be used in buying and holding seed corn wherever it could be secured, and assist in transporting it from one locality to another. For the first time a great many letters began to come from western states to the department of farm crops at Cornell, asking whether there was available seed corn in this State. Heretofore, New York has always sent west for a large part of its seed corn especially that grown for silage.

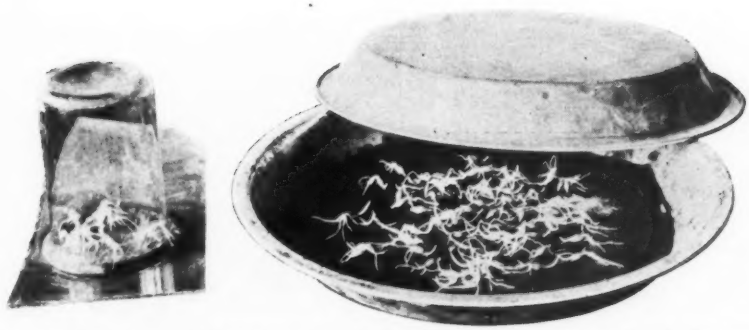
The State Seed Stocks Committee in

New York State was organized in December, and immediately took some steps to ascertain the situation here. It was soon discovered that there was very little corn upstate in New York that would germinate. This was a great surprise to the farmers as no one could remember when the ordinary light-rowed State flint would not make a good seed corn. It was found, however, that the corn in the lower Hudson valley and on Long Island was very good, and that a large proportion of this would germinate above 90 per cent. Very fortunately the department of farm crops had organized a seed corn association on Long Island during the summer of 1917, and it had inspected a large number of fields during the growing season and again inspected this corn after it was husked and in the cribs. This inspected corn was of the Luce's Favorite variety, which had been found through test covering a period of four years to be well suited for silage corn in all central and western New York. It is interesting to note that this type of corn has been grown in northern New Jersey, the lower Hudson and on Long Island for probably a hundred years, although it was not utilized to any extent upstate for silage corn. It was through variety tests conducted by the county farm bureaus that the department of farm crops was able to demonstrate that this Long Island and lower Hudson seed corn was superior for silage purposes. Hitherto, Leaming corn and other varieties were being imported from the west for silage while there was at home a far better type of corn.

It was soon ascertained that this would probably furnish an adequate supply of corn for silage purposes in this southeastern section of the State and northern New Jersey. The Dairymen's League at once bought all of the certified seed corn from the Long Island Corn Growers' Association, amounting to about 12,000 bushels. County agents in several counties, especially in southeastern New York, at once took steps to test all corn in their section and reserved that which was suitable for seed purposes.

The most serious situation is in regard to corn for grain in all central and western New York. In this part of the State, flint types are generally used but very little of the local corn will grow. It happens that there is some early flint in southeastern New York, and this is being collected and distributed upstate, but it is not likely that the supply will be sufficient. There is practically no early flint corn to be secured from other sources. The United States Department of Agriculture has made a thoro search of the New England states in order to get flint corn for Michigan and Wisconsin and very little was found. All the county agents in western New York are making a thorough search of their counties for any local supplies that may be good enough for seed, but only a few lots have been found so far, many of the counties in western New York reporting that they have practically no seed corn.

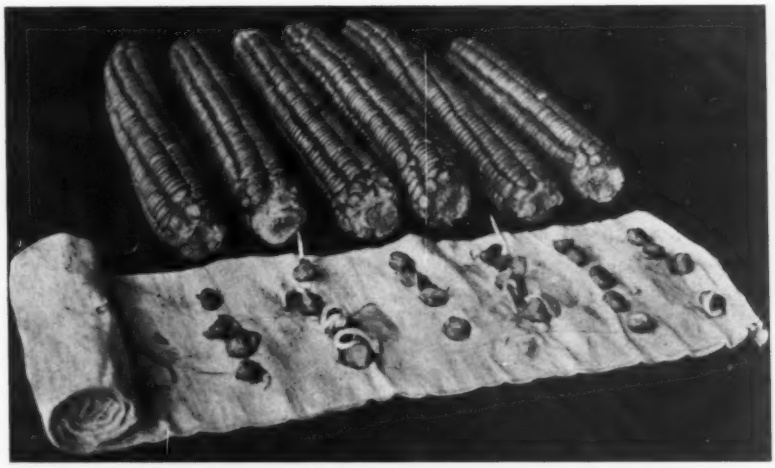
To handle the situation in a practical way in the State, a Better Seed Committee has been organized in every county, made up of from three to five farmers. In case seed corn is needed, these committees undertake to place the order and make the seed available so far as possible. In most cases, this seed is being made available through the farm bureau organizations. In the case of southeastern New York, where seed is available, the Better Seed Committee is handling and selling seed corn. It seems probable now that the entire needs of silage corn will be met in an adequate way, and most of the need for husking corn will be met, although there will no doubt be a considerable number of farmers who will neglect to place their orders for seed corn early enough to secure a supply. There will be many others who will fail to test their seed corn and will be depending on a supply that is not reliable, since their flint corn has always grown before this and it is hard to convince them this year that very little will.



Inverted Plates and Tumblers Are Very Simple but Efficient Seed Testers

The first thing for every farmer to do is to make a germination test of his seed corn, which can be done in a variety of simple ways. A circular (Extension Bulletin 26) giving various ways of testing seed, has recently been published, and is available to any one who wishes a copy. The rag doll tester is one of the simplest methods and can usually be recommended if care is used. A tester made by using two dinner plates or pie tins with a little blotting paper as an absorbent, is probably even more satisfactory. Both of the above methods are highly recommended.

In case a farmer finds that he wants seed corn or any other kind of seed, the first thing for him to do is to get into touch with his county agricultural agent as all the county agents have information as to the best procedure to secure seed corn for their section of the State. These arrangements have been made through the State Seed Stocks Committee of which Professor M. C. Burritt of Cornell University is chairman, and the writer is secretary. The other members of the committee are Mr. T. H. King, Sr.; Mr. Frank G. Kelsey, and Mr. Calvin J. Huson. This committee made the general study of the situation in the State, and suggested the detail arrangements for handling the situation in each county, although Professor John H. Barron has performed most of the work in regard to conducting seed tests and inspecting seed corn in southeastern New York.

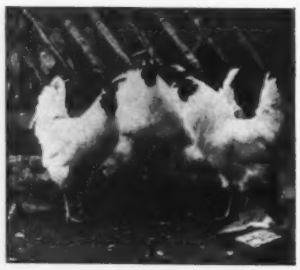


A Type of Tester That Is in Great Favor This Year—the Rag Doll Tester

Marketing New York's Surplus Poultry

By EARL W. BENJAMIN

Assistant Professor of Poultry Husbandry at Cornell University



PROBABLY at least ninety-nine per cent of the poultry sold from New York farms, except a few large duck farms, is surplus stock resulting as a natural consequence from the maintenance of a flock of layers. This surplus stock is not sold to a special trade at the expense of a high selling cost but, in order to avoid delay and extra work on the farm, is offered to the wholesale markets. A large percentage of this is shipped to New York, meeting the demands of a definite trade.

The large Hebrew population in New York City are heavy consumers of poultry, over one hundred millions pounds being consumed per year; all of this poultry must be killed in a prescribed manner by designated agents after it is ordered by the retail shop; consequently, it must be shipped to market alive, and distributed to the vicinity of the retail shops before it is killed.

Live poultry cannot be shipped long distances as cheaply or as satisfactorily as dressed poultry; therefore, in supplying the live poultry market, the producers in New York State have a positive advantage over western shippers, but in supplying the dressed poultry trade are at a disadvantage, because of the smaller quantities which we have for grading and packing, according to the necessary technical grades.

The prices of dressed poultry are much steadier, due to the balancing effect of being able to place surplus stock into storage warehouses during a glut, or draw stock out during a scarcity. In comparing these prices, one should remember that the net advantage of selling poultry alive, due to the shrinkage during dressing, is from 1½c (on a low market) to 2½c (on a high market) per pound for fowls and from 3c (on a low market) to 6c (on a high market) per pound for broilers, so when considering dressed poultry prices the active prices should be considered as 1½c to 2½c lower than they actually are, for fowls, and 3c to 6c lower for broilers. This is without considering the cost of dressing, and the fact that because of the closer grading possible with the dressed poultry, in the middle west, it is much more difficult for the eastern farmers to demand the top market on dressed poultry than on live poultry. All of these considerations have the result of causing nearly all of the poultry shipped from New York farms to be used to meet the demands of this Jewish trade.

The custom of eating large amounts of poultry during the Jewish holidays causes the demand to be particularly strong just ahead of these periods. While ordinarily there should be no delay in disposing of the surplus stock as soon as it is sorted, it will sometimes pay to hold birds for two or three weeks to place them on the market during the market days for some of these holidays. Of the twenty-five distinct holiday periods during the year, the six which are of most importance to the poultrymen are:

Pruim, February 26. Best market days—February 20-23. Kinds most in demand—fowls and prime hen turkeys.

First Passover, March 28-29. Best market days—March 21-26. Kinds most in demand—turkeys, heavy fowls, fat ducks, and geese.

Last Passover, April 3-4. Best market days—March 30-April 1. Kinds most in demand—prime quality of all kinds.

(Continued on page 486)

Keeping Milk Cool

By H. E. ROSS

Professor of Dairy Industry at Cornell University

IT should be the aim of the milk producer, so far as possible, to keep bacteria out of milk as it is due chiefly to these micro-organisms that changes occur there. While it is easily possible to produce milk with a comparatively low bacterial content, a few micro-organisms will gain in spite of the most careful methods, as milk is an excellent medium for germ life. Therefore, unless it is cooled and kept cold, these germs will soon multiply to large numbers and bring about spoilage. Milk should be cooled as soon as possible after being drawn and to as low a temperature as possible without freezing. If cooled to only 50°F. immediately after being drawn and if it is not allowed to rise above that temperature, the bacterial increase is usually very small, and sometimes there will be no increase at this temperature. It is better, however, to cool milk to at least 40°F.

The Cornell Conical Cooler

The main factors to be observed in cooling milk are efficiency, convenience, and economy of carrying out the process. Under efficiency should be included the temperature to which the milk is cooled, the rapidity of the process, and also the sanitary conditions under which it is carried out. No process of cooling should ever be carried on in a place where the milk is liable to be contaminated by dust and dirt or where there are strong odors which the milk can absorb. Convenience and economy are more or less closely related, as for example, it occasionally happens that there is available a good supply of running water of a temperature sufficiently low for the purpose. In such a case, utilizing this supply would be the most convenient and at the same time the most economical method of cooling milk. Another important consideration is the ease and convenience with which ice may be harvested. It is not at all impossible for the ice supply to be so expensive to obtain, that it would make the production of milk unprofitable or at least cut down very materially the net receipts for the product. Efficiency, convenience, and economy of cooling milk are three things which each prospective market milk producer should study carefully before going into the business.

Milk, of course, is cooled by giving up its heat to some object colder than itself and, the most rapid exchange of temperature is between objects of about

the same density. On account of the difference, then, in density between milk and air, milk will cool very slowly in air unless the temperature of the latter is comparatively low. Ice water or brine and ice are more often employed.

One of the simplest methods is to carry out the process in a milk can, which has been set in a tank of ice water. This method has the advantage of requiring very little special apparatus and the milk is not exposed to contamination by passing over or through several machines. The milk is strained into the can and kept in the container until delivered, and, if the can has been properly cleaned and sterilized, and if the atmosphere is free from dust and germs, this method offers very little chance for bacterial infection.

In cooling milk in cans, it is necessary to stir the milk frequently to obtain results. If the milk is not stirred, that which is next to the walls of the can will soon cool but the milk in the center of the can will hold its high temperature for a comparatively long time. The same thing is true in regard to the use of the various kinds of conical milk coolers. The refrigerating substance is placed inside the cooler and the milk is allowed to flow over the outside. The warm milk soon raises the temperature of that part of the refrigerating substance which is next to the walls of the cooler and unless the cooling material is frequently stirred, much of its efficiency is lost.

The tank which holds the ice water may be made of wood, galvanized iron, or cement. Wooden tanks are not very durable as the constant moisture and the sharp edges of the cans soon destroy them. The galvanized iron tanks are resistant to moisture but are not so practical as iron is at present too high in price and while not destroyed as quickly as wood, the sharp edges of the cans soon cause the tank to wear out.

The cement tank, when properly constructed, is in most cases the best. It can not, however, be moved about like a wooden or galvanized iron tank, but in most cases this would be no objection as the cooling is done in a milk house especially constructed for handling milk. Its walls should be not less than four inches thick and the wall on the side of the tank where the cans are lifted in and out should be faced with strop iron to prevent the can from chipping the wall. It is best to have this iron "U" shaped so that it will fit two or three inches down the sides of the tank. The tank should be sunk into the floor of the milk house as this makes it easier to lift the cans in and out, but the walls should extend about twelve inches above the floor to prevent dust and dirt from working into the tank. In spite of all precautions, more or less dirt will find its way into the tank, and for this reason it should be provided with a drain so that cleaning will be easy. This may be done by boring a hole in the bottom of the tank, and this hole should be connected with a drain or cess pool. It may be stoppered with a wooden plug to which is attached a stout chain so that the plug may be easily removed, but a better way is to have the hole stoppered with an iron stand pipe. The tank should have an overflow pipe to take care of the surplus water when cans are set into it, and this stand pipe may in such a case serve the double purpose of stopping the hole in the bottom of the tank and acting as an overflow for surplus water.

Occasionally there is a dairy farm with a water supply cold enough for cooling milk without the use of ice. In such a case, use may be made of a cooler of the tubular type. In this kind of connected tubes, the refrigerating substance flows through the tubes and the milk flows from a supply tank over the outside of the tubes. It is, of course, necessary to have some force to cause a circulation of the cold water. This may be obtained either by gravity or by means of a pump. Sometimes, both are employed, the water being pumped to a supply tank and the water circulated by gravity through the cooler. If the latter method is used, ice can be placed

in the supply tank and in this way a water supply which is normally not cold enough for the purpose can be utilized to good advantage. A plentiful water supply may often be utilized for cooling milk even though its temperature is not sufficiently low to reduce the milk to the desired temperature. By means of a tubular cooler the milk may be partially cooled and the process can then be completed by setting the cans of milk in a tank of ice water. This makes it possible to use less ice than would otherwise be necessary, and the process of cooling is carried on more rapidly.

Much lower temperature may be obtained with ice and salt than with ice alone. This is due to the fact that when two solids like ice and salt unite to form a liquid they absorb heat, and in cooling milk, the brine formed absorbs its heat from the milk. The temperature obtained depends to quite a large extent on the percentage of salt used. For example, if five per cent of salt is used the temperature obtained will be approximately 27°F. If comparatively large quantities of milk are to be cooled a brine barrel and pump may be utilized

(Continued on page 490)

Labor Saving Farm Machinery

By ALANSON E. MOREHOUSE

Agricultural Engineer at Washington, D. C.

IN times past the use of labor-saving farm machinery has been largely a matter of personal inclination, convenience, or progressiveness. In these days of the World War, however, it has become an absolute necessity. It is not a question of economy but a question of man-power. Fortunately, however, the necessity has, in this case, become a great blessing and the American farmer has become emancipated.

The past and the present in farming methods can, perhaps, be shown in no more forcible way than by the comparison of the time taken then and now, to produce some of the staple crops. While it formerly took three hours of labor to produce a bushel of wheat it now takes, thanks to improved machinery, but ten minutes. A bushel of corn under old methods took four and a half hours labor to be produced. Now it takes forty-one minutes. The labor to produce a ton of hay has been reduced from about thirty-six hours to twelve hours. All credit to American inventive genius!

Aside from the tractor and its specially designed implements, the horse drawn gang plow has been developed, which with the same man-power does double the work of the single plow. Anything that will conserve the energy of man in doing farm work is a direct gain in the sum total of possible production; therefore, the once-considered lazy-man's contrivance, a riding implement, has practically become a necessity. Even the lowly harrow has been transformed so the farmer now rides up out of the dust on the harrow-cart. Even weeders have their truck attachments.

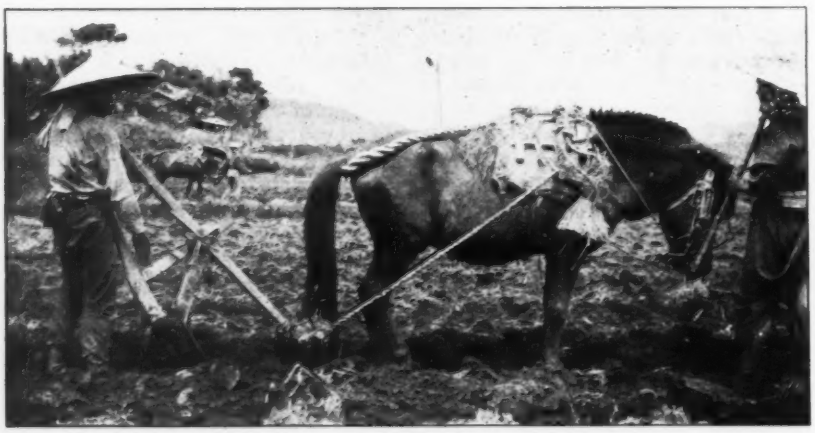
Formerly a shallow plowing and an indifferent harrowing with an inefficient harrow was considered a sufficient preparation of the seed bed. Then came the improved plows, harrows, toothed and disc, drags, rollers, and roller-crushers. These, while ably fulfilling their purposes, necessitated a number of trips over the same strip of ground to accomplish the desired result. Therefore invention has once more come to the rescue and the rotary tiller or soil-milling machine is being developed and the once-over tiller and rotary harrow are already on the market. Those implements do all the work of plowing, discing, and harrowing at one time on one trip across the field and leave the seed bed in perfect condition without spaces

below the furrow slices and with a smooth surface. This latter eliminates the great loss of moisture incident to leaving the ground surface rough for a considerable length of time between plowing and the following operations. A gasoline engine operates the tiller mechanism, leaving only the implement to be pulled by the horses or tractor. These implements thoroly pulverize or disintegrate the soil, thoroly mixing it with the weeds, grass, manure, or other fertilizer, and sod, leaving all in perfect tilth.

Improved planters and seeders are also doing their share in the conservation of labor. The old type horse corn planter and even the check row planter when the plate is turned by a wire are giving way to the cumulative drop check row planter with its saving of one man's labor and its great accuracy of drop, which means added bushels of the crop. Illustrative of this great saving, it has been calculated that in planting an acre of corn, 3 kernels to the hill, hills 3 feet 6 inches apart, that, if but 45 kernels in every 100 hills are missed or 15 percent, there will be a loss of 14.4 bushels per acre. This at $1.50 per bushel would amount to $21.60 per acre. Such figures make one realize the importance of seemingly little things.

Aside from its great economic advantage, the humble manure-spreader is a wonderful labor saving machine. Coupled with a litter carrier in the barn there is but one man-handling of the manure. Furthermore, the sanitary features and the time saving are important elements as well as the great saving of fertilizer value. The evenness of spread by the use of these machines has, by actual test, resulted in a crop increase of twenty-four per cent over that by the use of the same amount of manure spread by hand.

Perhaps the highest types of labor-saving machinery are illustrated by hay-handling implements. These practically eliminate all hand labor throughout the whole process from mowing to stacking or storing in the barn. The time saved in the haymaking operation also results in the saving of large amounts of hay which otherwise would be injured or totally ruined. Improved mowers leave little to be desired and the invention of the side delivery rake was a great step forward in agricultural progress. The direct or dump-rake packs the hay and delays the curing while the side delivery rake forms an airy cylindrical windrow wherein the hay quickly cures leaving it ready to be gathered by the hay loader attached to the hay rack or by a sweep



And to Think That in These Days of Scientific Farming There Are Men so Primitive as to Still Be Using Such a Plow as This

rake. If the hay is stacked in the field, a hay stacker is used, or if hauled to the barn, the hay fork and carrier safely and quickly store it away with the minimum of labor. If the hay is to be baled, horse-power or motor-power presses may be used at the stack and the hay hauled away to the barn or railroad in a baled condition. If the side-delivery rake is not used, then the hay-tedder turns the hay to assist in its curing. A low-down hay rack or hay platform wagon is also a great labor saver when hay is to be loaded by hand forks.

Corn harvesting machinery, while showing great development, has not as yet quite reached the desired goal. That is, it is not universally applicable. Local conditions such as down-corn and the like often lower the maximum efficiency possible under more nearly ideal conditions. From cutting corn by hand the development has been the introduction of the sled or wheeler cutter, the platform cutter, and the corn binder. Corn harvesters equipped with gasoline engines to operate all the mechanism are great labor savers. At least one make of corn binder delivers the bundles away from the machine without involving any manual labor. If desired, a corn elevator may be used attached to the binder so that the bundles may be delivered directly on to the wagon. The picker-husker is used when it is only desired to pick and husk the ears. Those who, through long days, have painfully gathered a corn crop are in a position to appreciate the great advantages of these modern machines.

The potato crop is now raised with a minimum of man effort due to the potato cutter, the potato planter, the potato digger, and the sprayer. In some types of diggers the elevator and picking attachments are operated by a gasoline engine, leaving only the drawing of the digger to be done by the horses.

It is a far cry from the sickle and cradle to the modern engine-operated horse-drawn grain binder but the evolution has occurred within a comparatively short period. The binder is used the world around and is one of the greatest factors in the production of the world's wheat crop. The threshing machine or separator has been continually improved. It is now equipped with a self-feeder and band cutter, and, after the grain is sep-

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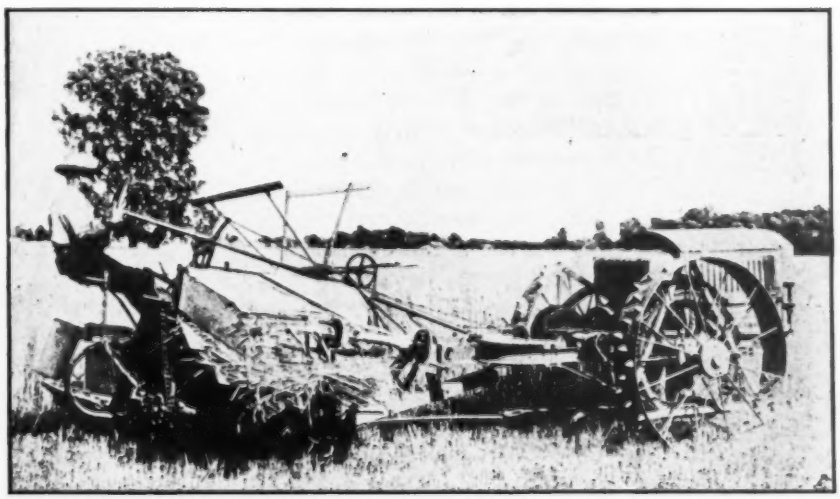

It Is Such Implements That Have Enabled the American Farmer to Take First Place in the Ranks of the World's Agriculturists

To the Red Bird

Thrice have I found thee singing on my porch,
Thou wondrous bird, thou animated torch
Of feathered flame, for in the Sunset sky
Perchance thou dipped one gorgeous Summer eve,
And now flit 'round the world to beautify;
Here, thou art wont to gaily interweave
Thy glory with the woodlands' varied green,
And 'mid red roses flaunt thy garb between.

I often hear thee whist'ling in the gloom
I often hear thee whistling in the gloom
Of dim lit forests, where the tall palms loom
Above, and make a towering, breathless dome,
And there on high like some rich petaled flower,
I see thee swinging in thy native home
Sheltered alike from torrid beam and shower,
Unconscious too, of any baleful clime
For reasons here reflect but summer time.

'Tis true, thy song doth only paraphrase
Thy humble brothers' merry roundelays,
One tiny sparrow with his urchin coat
Outsings thee truly with his slightest tone;
Did Nature stint thee with a common note
She made thee rare and beautiful alone;
And so I hail thee, bird of rose-red hue
My garden's guest, full welcome here anew!

—William P. Alexander, '17

Farming in England

By DAVID LUMSDEN

Assistant Professor of Floriculture at Cornell University

"Where men of wealth do stoop to husbandry,
It multiplieth riches exceedingly"—Bacon

TOURISTS visiting England have been much impressed with the manner and methods of farm practice. Many, speaking of their tour thruout the country, have commented on the system of farming seen and have likened the country to one huge garden. It is not remarkable that tourists would use the term "garden" when explaining their impressions of British agriculture, for, in general, not only the farm but individual fields are surrounded by hedges of hawthorn or by fences. A clean method of cultivation is practiced, and the houses and cottages which adorn or embellish many of the estates are proof that the term "garden" is by no means wantonly applied.

Note the hurdles enclosing a certain section of the field. The lambs are given the first choice of the feed before admitting the sheep which will clean up everything that remains before their removal to the second pen

Agriculture in Great Britain dates back prior to the time when the early bands of invaders came over to wrest Britain from its Celtic owners. History informs us that at that period the soil was well tilled, and a system of cooperative husbandry was practiced by the people.

It was the early part of the seventeenth century before considerable progress was made in agriculture. In 1645 clover was introduced, and turnip growing for stock feeding received an impetus. Liming of the soil had been largely discontinued since the fourteenth century, but was at this time again advocated. Richard Weston, a noted agriculturist of his time, with reference to the clover crop states: "Clover thrives best when sown on the worst and barrenest ground, which was to be pared and burned, and unslaked lime added to the ashes. Then it was to be ploughed and harrowed, and about ten pounds of

seed sown per acre in the end of March or April. It will stand five years, and then when ploughed up will yield three or four years running rich crops of wheat, and then a crop of oats, after which you may sow clover again." A great improvement in implements—ploughs, seed drills, draining machines—was manifest at this time.

During the years from 1816 to 1837, depression was evident; and, in general, very little progress was made. The revival of agriculture dates from the accession of the late Queen Victoria to the throne. The Scotch farmers contributed in a large measure to its success for it was they who had adopted the subsoil plough, and, thanks to Smith of Deanston (a prominent agriculturist known later as the father of modern drainage), drainage was practiced on many farms with excellent results. Horses were divided into classes as thoroughbreds, stallions, hunters, coach horses, hackneys, ponies, harness horses and ponies, Shires, Clydesdales, and Suffolks. Cattle were classified as Shorthorns, Herefords, Devons, Sussex, Longhorns, Welsh Red Polled, Jerseys, Guernseys, and Kerry; sheep as Leicesters, Cotswolds, Lincolns, Oxford Downs, Shropshires, Southdowns, Hampshire Downs, Suffolks, Border Leicesters, Clun Forest, and Welsh Mountain; pigs as large, middle, and small white Berkshire, or any other black breed, and Tamworth.

About the year 1844 a remedy was found for southern county farmers to keep the ground active for the nine months between harvesting the wheat crop in August, and allowing the land to remain idle until sowing the turnip crop the following June. Rye was sown in the fall and eaten green by the sheep in May, a good preparation for the succeeding winter crop. Turnip cutters were now regularly used, and corn and cake crushers soon followed. From this time on the farmer expressed full confidence in the chemist, and other scientific men, and inestimable benefit has been derived from their close cooperation. The results manifested were in larger yields of crops, better quality of stock, a more intensive system of farming inaugurated, together with a scientific plan governing crop rotation introduced.

The climatic conditions of the British Isles are entirely different from those in our northern United States. On account of the cool summers, corn cannot be successfully grown as a forage crop except in some particularly favorable localities. Green maize (corn) is considered an important crop on some soils; especially is this true if the summers are somewhat dry and warm. The varieties of corn grown are Early Prolific, White Horsetooth, and Giant Caragua. Root crops, in a large measure, take the place of ensilage corn, and many acres of mangels and turnips are used for stock feeding. These are fed both to the mature sheep and to the lambs. For the latter the best roots are chopped up and placed in troughs (shown in the center of the picture on the previous page) along with decorticated cotton cake, linseed cake, or a patent lamb food to hasten the maturity of the lambs. Keeping the stock in limited areas permits individual attention to the flock and insures the maintenance of soil fertility.

Prominent among the mangels grown is the variety Prize Winner, which has been known to produce 109 tons of 2240 pounds to the acre, the average crop yielding 65 to 75 tons. April is the most favored month for sowing seeds and the best results are apparently obtained by early sowings. The quantity of seed sown varies according to the varieties planted: eight to nine pounds of seed to the acre of Yellow Globe or Long Red, which are twenty-six to thirty inches apart, will yield a good crop; while Intermediate and Tankard varieties, which are grown at closer distances, ten to twelve pounds of seed to the acre would be satisfactory.

The preparation of the land for the crop consists in ploughing late in the fall. The preceding crop is usually wheat, and manure is applied at the rate of sixteen

to twenty tons to the acre with commercial fertilizer in the shape of superphosphate, 400 to 600 pounds. Mangels are stored for a few weeks after lifting before feeding.

The common method of storing is in hills eight to twelve feet wide at the base, and from five to six feet high with a convenient length to store the crop. The roots are first covered with three to four inches of straw, over which at a later date eighteen to twenty-four inches of soil is placed. Drain tile are placed in the hills in a perpendicular position to secure proper air conditions.

Swede turnips, Champion Top and Magnum Donum, are considered standards, yielding about forty tons to the acre.

Thousand-headed kale is found to be an excellent crop for both graziers and dairy farmers. The seed is sown in drills from April to June, the crop coming in from October to March. Two methods of cultivating kale are practiced, the first sowing in drills in the fields and the second in a seed bed and transplanted. In the latter method, the seeds are sown in March and April and transplanted to the fields during June and July. The distance between rows and between the plants is the same in both methods, namely, about thirty inches between the rows and twenty-four inches between the plants.

Clovers seem particularly adapted to British climatic conditions and are much planted. Popular varieties are Alsike, Crimson Red, and Sutton's Giant-hybrid Cow. The latter variety is highly esteemed as it often yields two or three cuttings in a year. It produces a heavier weight per acre than other clovers and will last from two to three years.

In conclusion, it is only fair to state that the experiment station at Rothamsted has rendered a great service to British agriculture, and the results achieved from crops on soils which were once classified as poor and barren, are monumental evidence of the missionary work in agriculture being performed by that institution. The seed growers have also assisted much by working on scientific lines and by breeding what is known as "pedigree seeds." Prominent among these growers are Sutton & Sons who, for a number of years, have conducted a private experimental and investigational farm. Their work along the lines of careful selection and crossbreeding in plants has done much for advanced agriculture in the British Isles.

The Way the English Farmer Stores His Mangels

Dairy Products, Pure and Adulterated

By T. J. MCINERNEY

Assistant Professor of Dairy Industry at Cornell University

WHEN a bottle of milk is thin or of a bluish color, the experienced person knows it has been watered or skimmed. Or, when the milk is poured from a glass, leaving a film nearly colorless instead of creamy, the same cheat is exposed. Here is where the appearance comes in as a means of selecting suspicious samples to be further investigated by such methods as the lactometer and the Babcock test, later confirmed by chemical analysis.

There are two kinds of lactometers on the market. One is known as the Quevenne lactometer and the other as the New York State Board of Health lactometer. The former is the more convenient and more scientific but in New York State the latter is used by most milk inspectors. In either case the reading is obtained by placing the instrument into a sample of milk and allowing it to float, noting what mark the reading on the lactometer scale is, at the surface of the liquid. The temperature should be 60°F., or if it varies, certain corrections must be made.

In general, any milk having a Quevenne lactometer reading from 29-34 may be considered normal as average milk gives a reading of 32. If the reading is below 29, it indicates watering, while above 34 indicates skimming. Any milk reading 29-31 and very poor in appearance has probably been both skimmed and watered.

The Board of Health lactometer reads 110 for average milk. Normal milk may vary from 100 to 115 on this lactometer scale. If it reads below 100 the sample may have been watered, while if it reads above 115 the sample may have been skimmed. The per cent of fat is obtained by the Babcock method. The test in brief is as follows:

17.6 c. c. of milk (18 grams) are placed in a whole milk test bottle and 17.5 c. c. of sulphuric acid, (sp. gr. 1.82-1.83) added. The contents of the bottle are shaken until the liquid turns black in color. This destroys all the solids not fat of the milk. The bottles are then placed in a centrifuge and whirled for five minutes; after hot water is added to bring the liquid to the base of the neck, the bottles are again centrifuged for two minutes; more water is added to bring the fat column to the graduated portion of the neck; then the bottles are centrifuged for one minute longer and the reading taken. The per cent of fat is read directly from the scale on the neck of the bottle. In New York State, milk is considered adulterated if it contains less than three per cent of fat or less than eleven and one-half per cent of total solids. Average milk contains four per cent of fat and twelve and seven tenths per cent of total solids.

Cream

In New York State, cream must contain at least eighteen per cent of fat which is determined by weighing out nine grams of the sample to be tested into a nine gram cream bottle. Nine grams of water are then added to retard the action of the acid. The same amount of acid is then added as for whole milk. The bottles are then centrifuged the same as for whole milk. After centrifuging, the bottles are placed in a water bath at a temperature of 140°-150°F. The fat column in the cream test is so large that it must be tempered before reading. Before the reading is taken a few drops of glymol (white mineral oil) colored red, are placed on top of the fat column to remove the meniscus. The per cent of fat is then read from the scale.

Milk and Cream Preservatives

One of the most common preservatives added to milk is formaldehyde. A few drops added to a quart of milk will keep it sweet for several days. This test may

(Continued on page 492)

Hooverising the Woodlot

By J. B. BENTLEY

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THE past season has witnessed an unprecedented demand for wood fuel. The shortage of coal, brought about by the needs of our navy and our allies in the war, made it necessary to resort to wood as a substitute for coal, and the indications are that the demands for wood next winter will equal or exceed those of the winter just passed. Responding to the law of supply and demand, the price of wood immediately began to rise, and in New England a price of $18.00 per cord (standard 4-ft. wood) for first grade wood was reported. If high prices prevail again next winter, as they undoubtedly will, it means that many woodlot owners will have an opportunity to sell some of their surplus wood. In order that each owner of woodland may obtain the full value for his wood, these few suggestions are presented, in the hope that cordwood values may be fixed in accordance with the proper rules of appraisal.

It is the purpose of this article to arouse the owners of woodland to a sense of the real value and importance of wood and to state the factors on which the value of wood as fuel depends. Further, the desirability is emphasized of cutting the cordwood in such a manner that the productiveness of the trees left standing will not be diminished.

Some kinds of wood are much better than others. A cord of hickory, maple, or oak will actually yield more heat than a cord of basswood, poplar, or willow; and a cord of thoroly seasoned wood will yield more heat than the same wood in a green condition. The cost of labor and supplies varies a good deal in different communities, and is a potent factor in determining values. The accessibility of the timber includes not only the actual distance from markets, but the relative ease with which it can be felled, skidded, hauled and worked up into cordwood. The slope of the ground, the character of the surface, the presence or absence of rocks, brush and other obstacles all have their share in determining the degree of difficulty with which a logging job is beset.

Taking all these factors into consideration, the actual stumpage value is figured thus: Divide the local selling-price by 1 plus a fair percentage of profit (usually estimated at from 15 to 20 per cent.) From this figure, subtract the cost of operations. The remainder represents the stumpage value.

Example: Let the local selling price for 4 foot wood=$9.00 per cord.
Let the percentage of profit =20%.
Let the operating costs=$6.
Then $9.00—$6.00=$1.50.
1.20

The result, $1.50 is then the stumpage value, or value of the standing timber, per cord.

A fairly large perctentage of profit is allowed in figuring stumpage values because of the hazardous and uncertain nature of work in the woods. Of course, it is not always easy to arrive at exact figures, in calculating these costs, but the attempt should be made, for it is the only logical way in which to proceed.

The value of timber on the stump depends chiefly on five factors: (1) the species, or kind of tree, (2) the degree of soundness it possesses, (3) the cost of the labor and supplies used in converting the tree to the final product, (4) the accessibility of the timber and proximity of markets, (5) the supply and demand.

Next, how shall the timber owner cut his trees so that the productive capacity of the trees left standing shall not be impaired? The question is an im-

portant one for it should be remembered that as a result of the cry which has gone out for more wood, there is danger that a great many people, owners of woodlots, may rush into the work of cordwood production, hastily, thotlessly, and with a total disregard for the future welfare of the woodlot. Taking advantage of the current high prices, they will cut everything in sight, or, what is worse—the best of what is in sight, with the result that they will surely "kill the goose that laid the golden egg" i. e., they will reduce the woodlot to such a state of unproductiveness that it will recover only slowly, if at all. It is entirely possible to cut the trees in a woodlot so that the conditions for profitable growth will actually be better; in other words, the present emergency gives the owner of timber a chance to make some money on fuel wood by cutting and selling the least desirable material, and at the same time the productive capacity of the remaining trees can be materially increased.

The problem of cutting the timber without lessening the value of the remaining trees is sometimes a complex one, but the following rules may be taken as a guide in selecting trees for cutting:

(1) Cut all trees of inferior species, and all unsound, diseased, or damaged trees of whatever species. This will be a step in improving the composition of the woodlot.

(2) Of the sound trees remaining in the stand, do not cut so many that the ground will be left less than two-thirds shaded. That is to say, after the cutting is made, the standing trees should be numerous enough to leave about two-thirds of the ground in shade, and one-third in sunlight, at noon on a bright day.

(3) Make it an invariable rule to leave plenty of good thrifty trees of the desirable species to furnish seed for the openings.

Observance of these rules will, in most cases, yield plenty of material, of fair grade, and will insure the presence of plenty of seed trees, to provide seed and shelter for the next crop.

First and last, the woodlot should be regarded as a valuable, income-producing part of the farm, and it should be managed so as to be a perpetual source of profit. Overcutting at the present time means a long period to follow during which no returns can be expected. Neglect at the present time means stagnation of growth, and a loss of available money returns. The golden rule—careful cutting, followed by protection and a small amount of care—means a constant source of supply which will reduce the anxiety of the owner in the face of another coal shortage, if indeed, it does not make him largely independent of coal.

The Good Blacksmith and the Horse

By HENRY ASMUS

Professor of Farriery at Cornell University

RAISING and holding the feet of the horse to be shod can always be done without much trouble if the horse has been accustomed to it from early colthood. Nevertheless certain rules governing the manner of taking hold of the feet and of afterwards manipulating them are of value.

First, see that the horse stands in such a position that he can bear his weight comfortably upon three legs. This is well worth noticing and if the horse does not voluntarily assume such an easy position, move him gently until his feet are well under his body. Then the shoer should grasp a foot but never suddenly or with both hands. The horse should first be prepared for this act.

If the shoer, for example, wishes to raise the left fore foot for inspection, he stands on the left side facing the animal, speaks quietly to him, places the palm of the right hand flat upon the animal's shoulder and at the same time with the left hand strokes the limb downward to the cannon (the bone extending from the knee to the fetlock) and seizes the cannon from in front. With the right hand he now gently presses the horse towards the opposite side and, the foot becoming loose as the weight is shifted upon the other leg, he lifts it from the ground. The right hand now grasps the pastern from the inside followed by the left hand upon the inside and the right hand on the outside. Then turning partly to the right, the holder supports the horse's leg upon his left leg in which position he should always stand as quietly and firmly as possible. If, now, the shoer desires to have both hands free to work upon the hoof, he grasps the toe with the left hand in such a manner that it rests firmly in the palm while the four fingers are closely applied to the wall of the toe, takes a half step toward the rear, passes the hoof behind his left knee into his right hand which has been passed backward between his knees to receive it, and drawing the hoof forward, outward and upward, supports it firmly on his two knees, the legs just above the knees being applied tightly against the pastern. The forefoot should not be raised higher than the knee, nor the hind foot higher than the hock, nor either foot be drawn too far backward.

In lifting the left hind foot, the animal should be gently stroked back as far as the angle of the hip against which the left hand is placed for support, while the right hand strokes the limb down to the middle of the cannon which it grasps from behind while the left hand presses the animal's weight over towards the right side. The right hand loosens the foot and carries it forward and outward from the body so that the limb is bent at the hock. The holder then turns his body towards the right, brings his left leg against the anterior surface of the fetlock-joint, and carries the foot forward. If the right foot is to be raised, the process is simply reversed. In raising the feet no unnecessary pain should be inflicted by pinching, squeezing, or lifting a limb too high. The wise shoer avoids all unnecessary clamor and disturbance. Quiet, rapid, painless methods avail much more. In dealing with young horses, the feet should not be kept lifted too long. Let them down from time to time. In old and stiff horses, the feet should not be lifted too high, especially in the beginning of the shoeing.

Vicious horses must often be severely handled. Watch the play of the ears and eyes continually and immediately punish every exhibition of temper either by jerking the halter or bridle vigorously or by loud commands. If this does not avail, then if soft ground is at hand, make the horse back as rapidly as possible for some time over this soft surface. It is very disagreeable and tiresome to him.

To raise a hind foot a strong, broad, soft plaited band (sideline) could be knotted into the tail, looping it about the fetlock of the hind foot and holding the end. This often renders valuable service. The holder seizes the band close to the fetlock, draws the foot forward under the body and then holds it as above descirbed. The use of such a band compels the horse to carry a part of his own weight and at the same time hinders him from kicking. Before attempting to place this rope or band about the fetlock, the front foot on the same side should be raised. The various sorts of twitches are objectionable and their use should not be allowed unless some painful hoof operation is to be done.

A Very Unusual Photograph Showing How the Hoof Has Grown Beyond and Enclosed the Shoe

Those horses which resist the attempts to shoe them should not be immediately cast or placed in the stocks but first have a quiet, trustworthy man hold them by the bridle-reins and attempt by gentle words and soft caresses to win their attention and confidence.

Ticklish horses must be taken hold of boldly for light touches of the hand are to such animals much more unpleasant than energetic, rough handling. Many ticklish horses allow their feet to be raised when they are grasped suddenly without any preparatory movements.

Preparing the hoof for the shoe is usually termed paring, trimming, or dressing. It is a most important step in the process of shoeing and its object is to shorten the hoof which has grown too long under the projection of the shoe and to prepare it to receive the new shoe. The instruments needed for this work are the rasp and the hoof-knife. Upon large hoofs a pair of sharp nippers or a sharp hewing knife with broad handle and perfectly flat, smooth sides may be used since these instruments will considerably facilitate and hasten the work. After the shoer has carefully examined the hoofs and has fixed in mind the relation of the height of the hoofs to size and weight of the body, he cleanses the hoof and removes all stubs of old nails, at the same time asking himself if, where and how much horn is to be removed. In all cases all loosely attached fragments of horn are to be removed, for

A Side View of the Same

example, chips of horn produced by repeated bending and stretching of the lower border of the wall. The sole is then freed from all flakes of dead horn. The shoer then runs the rasp around the outer border of the wall and breaks it off to the depth to which he thinks it should be shortened and then cuts the wall down to its union with the sole so that at least one-eighth of an inch of the edge of the sole lies in the same level as the bearing-surface of the wall. Finally, the wall, white line, and outer margin of the sole, forming the bearing-surface, must be rasped until they are perfectly horizontal.

In dressing the hoof the branches of the frog should always be left prominent enough to project beyond the bearing-surface of the quarters about the thickness of an ordinary flat shoe. If it be weakened by paring, it is deprived of its activity, and shrinks and the hoof becomes narrow to a corresponding degree. The frog should, therefore, be trimmed only when it is really too prominent. However, loose and diseased particles of horn may be trimmed away when it is affected with thrush.

The bars should be spared and never shortened except when too long. Their union with the wall at the quarters must in no case be weakened and never cut through (opening up the heels). They should be left as high as the wall at the quarters or only a little less while the branches of the sole should lie about one-eighth of an inch lower.

The buttress (angle formed by the union of the wall and bar) requires special attention. In healthy unshod hoofs the bars run backwards and outward in a straight line from the anterior third of the frog. In shod hoofs, however, it happens that the buttresses gradually lengthen, curl inward and press upon the branches of the frog, causing the latter to shrink. In such cases the indication is to remove these prolongations of horn from the buttress so as to restore to the bars their normal direction.

The Life of a Cow Tester

By F. A. CARROLL

Mercer County Farm Agent, New Jersey

I HAVE been asked to write a story on the life of a cow tester, and as I consider the year I spent at that work one of the happiest and most profitable years of my life, I want to pass along a good word for the work, so that other young men who may have a chance to consider such a position may have the benefit of my experience.

First, what is a cow tester? A cow tester, sometimes known as a supervisor or official tester, is a man trained in dairying, and one who has had some practical experience with dairy cattle, in charge of a cow testing association. Generally, but not necessarily, he is a young man between the ages of twenty and twenty-five. An association is generally made up of twenty-six dairy farmers, with approximately four hundred cows. The annual cost per cow is usually $1.25 or ten and a half cents per month. The tester spends one day a month at the farm of each member of the association. He arrives during the afternoon and begins work by weighing and taking samples of milk from each cow at milking time. During the feeding operation the roughage and grain for each cow is also weighed. The following morning a similar record is made. During the forenoon the samples of milk are tested for butterfat, and the value of the milk or butterfat is computed at market prices. The cost of feed consumed during a day of twenty-four hours is then figured. The difference between the cost of feed and the value of product will determine the profit or loss per cow. The monthly pro-

duction and profit is determined from the day's work and at the end of the year each member is given a complete record of the production of the individual cows in the herd.

I was working on a farm in Rhode Island in the fall of 1913, having completed my work at Rhode Island State College the previous June, when an offer came to take charge of a newly organized association in New Hampshire. I promptly turned the offer down as I did not believe I wanted to go among strangers, eat at a different place every day and sleep in a different bed each night; in short, live with twenty-six different families every month. I did a great deal of thinking after turning down the offer, and when the second offer came I accepted. I decided that I would take a chance for it might be opportunity knocking, and it has proven since that such was the case.

I shall never forget my first impression of the good old White Mountains when I landed at Jefferson Junction, Coos County, New Hampshire, on the evening of October 20, 1913. There was plenty of snow on the ground, and those wonderful mountains seemed to bid silent welcome to my new field of endeavor. I spent the night with a young man who was principal of the local high school and a graduate of an agricultural college. It was mainly thru his efforts that the association had been formed. The following evening he took me to the farm where I was to start work. This particular farmer was of a rather jovial nature, and he had a good time jollying me about all the equipment I carried. He said he did not believe in the work and did not need it himself, but as they needed members to make the association go, he joined for the good of his neighbors. He had twelve scrub cows, and he afterward admitted at a meeting of the association that he got enough good out of the association the first month to pay his dues for the year. He became a real force behind the association's work, and went so far as to form an orchestra among the members. I landed at another farm about a week later, on a bitter cold night, and found the owner a little out of sorts. He said he was not going to remain in the association and was not going to let me stay over night. I finally persuaded him to let me go to the barn with him. He was all alone and had twenty cows to milk. I took a pail and helped him milk and also got my samples. When I told him I had obtained my samples, he was surprised but he began to show interest. I explained the work and talked cows with him until near midnight and we were out at 4 a. m. the next morning. I recall another case where the owner would not let me stop the first month; but he changed his mind afterward when he found that two of his neighbors were making more milk by feeding a balanced ration. I believe I am safe in saying that he is still a member of the association.

I could go on enumerating similar cases where the work proved of practical value to the farmers, but one thing that the first Coos County Cow Testing Association accomplished for that county was the establishment of a get-together-spirit among the dairymen. The good resulting from those meetings is still felt in the community, and the pleasant memories will live on. We would arrange a musical program and get a good speaker on some practical problem of interest to dairymen. The first talk was on the "Value of a Pure Bred Sire." That one talk resulted in opening the way for placing twelve pure bred bulls at the head of herds where their kind was never known before. Neighbors met at these meetings, which were usually held at a member's house, exchanging ideas and finding out that so and so was even a better fellow than they had thought. Personally, I believe that one big factor in the success of these meetings was that the ladies were made especially welcome and showed they were indispensable by always having an abundant supply of good things to eat. One of the meetings was

held at Jefferson in one of the big farm houses, just before the summer boarders started to arrive, in 1914. We had the Commissioner of Agriculture and another good speaker on the program, and the cow testing association orchestra furnished music. When it came time for lunch the lady of the house rang a big cow bell and four young ladies appeared dressed as milk maids, two carrying new milk pails overflowing with cake and sandwiches, and the other two new milk stools laden down with ice cream. This little bit of originality on the part of the lady of the house was only one of the many interesting and helpful ideas that were brought out at these gatherings.

We gave considerable attention to getting the members to see the value of a balanced ration, and wherein proper feeding was a paying proposition. We talked buying grain in carload lots, and finally bought a carload of hominy feed. It cost us $30.00 per ton delivered, even tho some of the wise ones who claimed that the farmers would not stick together considered such a thing impractical. It went thru with flying colors. Another farmer and I started out at 8 o'clock one morning, visited some ten or twelve farmers, got the necessary $600.00 and were at the bank taking up the draft at 11 A. M. The first car meant a saving of something like $100.00, and the beginning of a movement that has since brought a number of carloads of grain into that particular county. This plan of buying grain in carload lots has proven worth while in a number of the associations thruout the country. It not only means a saving, but many times introduces varieties of grains essential to a good balanced ration, for which the local dealer had never before found a demand. It is only fair that a local dealer, buying in carload lots and selling in 100 pound lots, should receive a fair margin to pay for holding over, distribution, and bad bills; but many times the unscrupulous dealer has been brought to his senses when he has seen the farmers get together and buy coöperatively rather than pay him an excess profit.

During the year a number of dairymen became interested in the work, and without a great deal of effort we were able to organize two associations at the end of the year, when the time came to reorganize the old association. While it has been claimed by some of our leading authorities on cow testing association work that the tester, or man in charge, is seventy-five per cent of a successful association, like all other propositions of a similar nature, the work could not be a success if the members did not coöperate. I frankly admit that the success of the first Coos County Cow Testing Association was due primarily to the efforts of the progressive dairymen in that section.

I can not think of any place where a young man interested in dairying can get a broader and more profitable training than as supervisor of a cow testing association. He has opportunities to study human nature, make true friends, and at the same time do something both useful and profitable to all concerned.

Prevent Spoilage of Flour

The United States Food Administration says that flours and meals should be stored in cool, dry, well-ventilated places; warehouses should be whitewashed and swept clean before these products are placed in them; large supplies should not be accumulated. If too large a stock is on hand, it should be reduced and the flours and meals consumed as soon as possible..

Care should be taken in storing bags of flours and meals to have sufficient space between the tiers to allow abundant ventilation, and to raise the bags sufficiently from the floor to exclude rats, mice, and insects; also to permit cleaning of the floors without the necessity of transferring the products from one part of the warehouse to another.

Save More Wheat

THE Wheat Saving situation is an ever increasingly serious one. No one will dispute the fact that the soldiers and sailors not only of our own country but of the Allies as well should have their normal share of wheat. They are the ones who are fighting our battles, undergoing our physical hardships and therefore should not be deprived of their accustomed food. It is for us, who remain at home, to do everything in our power to help these men win the war. In order, therefore, to supply the Allied Armies with their proportion of wheat till the next harvest, we Americans must reduce our consumption fifty per cent of our normal amount or in other words, from forty-two millions to twenty-one millions of bushels; this means one and one-half pounds per week for each person.

Some localities can adapt themselves to wheat saving better than others and some families can help better than others. In the cities the majority of the families depend upon bakers' bread. This must, of necessity, contain more wheat to make it durable. In the country where other grains and potatoes are plentiful and the housewife bakes her own bread there should be much less wheat used. There are thousands of American families at present using no wheat at all except a very little for cooking purposes, and are in perfect health and happiness in so doing. The well-to-do in our population can afford to make more sacrifices than the poor whose chief food has always been wheat bread.

Under the present regulations, no wheat product can be sold without the sale of an equal weight of some other wheat saving grain. Often it is hard to know just how to use these grains. The following recipes, contributed by Miss Lucille Brewer of the Home Economics Department, have been worked out to help solve this problem. They have been taken from the proof of a new April bulletin on the wheat saving problem, published by the New York State Food Commission in cooperation with the Federal Food Board and prepared by the Department of Home Economics of the New York State College of Agriculture, Ithaca. The department will send this bulletin free to anyone in the state.

Barley and Cornmeal Sticks

¾ cup barley flour,
¾ cup cornmeal
3 teaspoons baking powder,
1 teaspoon salt,
2 tablespoons fat,
1 egg,
¼ cup milk.

Sift together the dry ingredients and cut in the fat. Add the beaten egg and the milk, and mix the ingredients well. Turn the mixture onto a board, and shape it into small oblong rolls. Bake the rolls in a moderate oven for about 20 minutes. These rolls are good served with a salad.

Steamed Brown Bread

1½ cups boiling water,
1 cup cornmeal,
2 cups barley flour,
½ cup molasses,
1 cup sour milk,
2 teaspoons baking powder,
1 teaspoon soda,
1 teaspoon salt,
¾ cup raisins.

Sift the cornmeal into boiling water, and cook it for 10 minutes. Cool it slightly, and add the other ingredients. Turn the mixture into a greased mold and steam it for 2 hours. Dry it in an oven for 20 minutes.

Rolled Oats Bread

1 cup rolled oats, ground,
2 cups milk, scalded,
1 teaspoon salt,
1½ teaspoons sirup,
1 cake compressed yeast,
½ cup lukewarm water,
2½ cups wheat flour.

Stir the oats into the scalded milk, and cook them 20 minutes in a double boiler. Add the salt and the sirup. Cool the mixture until it is lukewarm and add the yeast softened in the water. Add the flour and stir the mixture well with a spoon. Allow it to rise until it has doubled in bulk. Stir it down, turn it into a greased pan, and let it rise until it is almost doubled in bulk. Bake it for 1 hour in a moderate oven.

Rice Bread

1 cup cold boiled rice,
1 egg,
1 cup milk,
2 tablespoons flour,
1 tablespoon melted fat.

Beat the egg until it is light. Add the other ingredients and beat the mixture well. Turn it into a greased pan, making a layer ¼ to ½ inch thick, and bake it in a moderate oven until it is firm. Rice bread may be served hot for breakfast or cut into pieces and used as a boarder for lamb fricassee.

Barley Cake

2/3 cup honey,
1/3 cup sour milk,
1 egg beaten,
1¼ cups barley flour,
1/3 cup rice flour,
1 teaspoon baking powder,
½ teaspoon soda,
½ teaspoon salt,
¼ cup fat melted,
Vanilla.

Combine the ingredients in the order given, sifting together the dry ingredients before adding them. Bake the cake in a rather shallow pan in a moderate oven.

Barley Pastry

1 cup barley flour,
½ teaspoon salt,
1 teaspoon baking powder,
¼ cup of fat,
Cold water to bind.

Cut the fat into the sifted ingredients. Add the water slowly. This pastry has a good flavor and texture but is difficult to handle. It is good for pies in which the crust is baked first.

Barley and Potato Pastry

1 cup of barley flour,
1 cup of cold mashed potato,
¼ cup of fat,
1 teaspoon of salt,
½ teaspoon baking powder,
Cold water, sufficient to bind.

Mix the flour and the potato. Add the water carefully in order not to use too much. This pastry is excellent in flavor and of good texture. It may be used with pies with one or two crusts.

Corn Meal and Potato Pastry

1 cup of cornmeal,
1 cup of boiling water,
1 cup of cold mashed potato,
1/3 cup fat,
1½ teaspoons salt,
½ teaspoon baking powder.

Sift the cornmeal into the boiling water, and cook it for 10 minutes. Cool it and add the other ingredients. Allow the mixture to stand for at least one hour before rolling it out, in order that it may be more easily handled. It may be mixed the day before it is used. This pastry is good for pies in which the crust is baked first, such as lemon and chocolate pie. It is somewhat difficult to handle.

CAMPUS NOTES

An industrial unit of women's clubs is being formed at Cornell under the supervision of the Woman's Land Army of America. Their work will be to relieve, wherever possible, the need for light labor upon farms. If possible the women from the same group will live together in communities, and go from these to work upon neighboring farms. Professor Works of the department of rural education, is locating farms in need of such assistance, and will supervise the placing of women in these positions.

THE CORNELL COUNTRYMAN

FOUNDED 1903 INCORPORATED 1914

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

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EDITH RULIFSON GERTRUDE SAMPSON

ITHACA, N. Y., MAY, 1918

WE should not do our bit. The Nation of which each member does his bit is lost. Now the forces of despotism are hurling themselves against Civilization's own walls in the fields of France and our national peril is too great to be measured by such insignificant and unavailing measures as "our bit." It makes no difference who we are, whether soldier, sailor, farmer, mechanic, laborer, student, or just "Mr. Citizen," we must devote absolutely everything to the national cause. Victory can not be won by half way measures. We should not do "our bit," we must do "our *all*."

SPRING is here. Often, the very idea of going to classes seems repulsive to the students. We long to be outside—anywhere but in the class room. Under normal conditions the result merely would be a couple of cut lectures but now when we read about the American troops going into action, we feel that our place is with them.

We should remember, however, that we are also serving America by remaining here in college and tending strictly to our work. Commissioner Claxton of the National Education Asociation recently said, "No studen should leave college but to fill a position that can not possibly be filled by another unless definitely called by his country." The Council of National Defense is of the same opinion. They know that it is highly important for the undergraduate to continue in their courses.

It is not that we college men want somebody else to fight our battles for us. As this war is not one so much of brute force as it is of intellectual skill, the trained men behind the lines will be worth a thousand at the front. And the men trained in increasing the all important food supply are surely of great value.

Nevertheless, if any of us hear the call of Duty and know that it is not the passing desire of the moment, let us answer. We should enter into it, however, with our whole heart and with a full knowledge of its seriousness. But those of us who stay at home should not think themselves slackers but men who are being prepared for the greater demands which will inevitably be upon them in the not far distant future.

THE expenses of the farmers now for the summer of 1918 are indubitally higher than they have ever been before. The price of all sorts of farm machinery has increased 60% to 98% or more over what it was four years ago. Seed corn, if it can be obtained, costs now more than $7.50 a bushel; prepared poultry and stock feed is 100% more expensive; in the West the farmers have found it difficult to get sufficient help even at $75 a month and at an easy nine hour day. Such is the disheartening situation that the farmers of today must face.

Let us not, however, be too gloomy over

what the future holds for us. Let us rather be cheerfully optimistic, as the farmers' expense problems, like so many other difficulties which seem insurmountable and impossible of solution at first, prove less formidable on closer examination. In spite of all the growling and grumbling, farming, except to the hopelessly inefficient, proves to be a very attractive calling under the present war conditions.

The farm "rent" or the interest upon the farm investment remains fairly stationary.

The farmer can obtain his food and most of his fuel at a low rate from his own farm.

Few businesses are so ably adapted as the business of farming to meet the forced economy of the war condition. Implements are certainly high but can be more or less easily fixed or repaired while at lower cost prices, the farmers would be tempted to discard them altogether and to buy new; fences can be patched instead of replaced; large numbers of the less efficient labor can be used instead of the scarce experienced help; rural communities are learning more and more the wisdom of the cooperative use of farm machinery.

Then there is the more obvious increase in the prices of all farm products, wheat selling at 103% more in 1918 than in 1914, corn 100% more, barley 109%, cotton 307%, and potatoes 151%.

What more do we want?

NOW that the Federal Farm Loan System has recently completed its first year of actual operation it is pertinent that we review the results of the system. Before its operation began, many people doubted its practicability, arguing that the American farmer would never organize for cooperative buying. Such has not been the case, however.

Up to the first of the past month, 2,808 farm loan associations were incorporated, representing approximately four associations to every five counties in the United States; each averages about 20 members, representing a total membership of about 56,000 farmers. The twelve Federal Land Banks, out of 120,000 applications for loans, have approved 80,000, amounting to over $160,000,000 and on more than 30,000 of these loans, $80,000,000 has been paid to the borrower.

In spite of the unusual expenses of starting this system and on appraising and determining the titles on many which have not yet been closed, the banks have easily operated on a difference of ½% between the loaning rate and the rate which they paid on their bonds. While little income was received during the first half, during the latter part there was enough in nearly every case to wipe out the expenses of the first half. The value of business was enough to assure a handsome surplus for the second year.

In all respects it is safe to say that the Federal Farm Loan System has been a distinct success and justly deserves all that its advocates said in praise of it.

THE present prices received for farm products should not be the only factors to spur the farmers on to a greater production. It is not hard to be patriotic as we are told to be, and produce greater harvests when each crop sown is sure to put another dollar into our pockets. The farmer must, rather, make two plants grow this year where one grew the years before and to be willing to risk a possible loss of expensive seed and material on a field whose crop production is not such a sure thing. That is the true measure of farmers' Americanism.

Campus Notes

Wheatless Days at the University

The new efforts of the United States Food Commission to reduce wheat consumption have resulted in a reduction by more than half of wheat products offered at the University dining halls. Every possible means is being used to lower consumption of wheat and to encourage the use of substitutes. There has been excellent cooperation on the part of the patrons and this has been made possible a great saving. Rye and corn substitutes are in use, altho they are just as expensive as the wheat.

The Work of The Food Commission

The recent conferences in Ithaca of the State Food Commission of which President Shurman is a member, have resulted in a State wide campaign for farm labor. Men who have had experience in farm work are being pledged and a great deal of labor has been promised in this way. Every means possible for increasing the labor supply on farms will be taken by the commission even to placing women and boys in places where their labor can be utilized. About sixty labor-saving tractors have been purchased by the commission and these are to be put at the service of the farmers. The Commission has also adopted the proposal of buying ten ditching machines for the purpose of installing drainage systems thruout the state. These machines will be delivered early in the summer, and are to be loaned to various counties under the direct supervision of the Farm Bureau managers. The College of Agriculture will direct the laying out of the systems and the details of construction.

"C" Men of the College

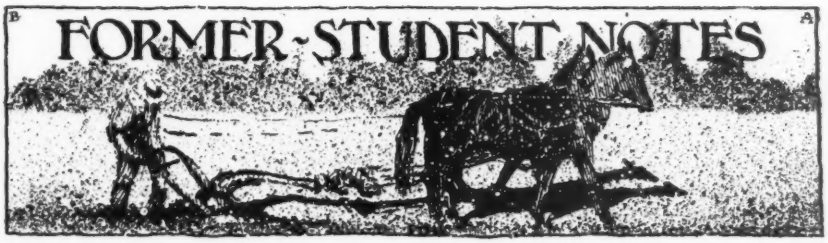
Among the men in Agriculture to receive "C" awards are: Cross Country, C. G. Seelbach '19; Football, C. F. Ackerknecht '18; A. L. Hoffman '18, R. C. Van Horn '18, L. S. Huntington '19, B. O. Reuther '20, R. E. Swanson '20; Minor Sports, G. T. Dibble '18, L. E. Rofe '18.

Game Farming

The Wild Life Series of public lectures in connection with the department of poultry husbandry will continue to be given in Roberts Assembly thruout the spring term. The schedule includes lectures by some very well known authorities on game breeding in this country. The care of wild turkeys, diving ducks, and pheasants has already been taken up. H. T. Rodgers, general superintendent of all the New York State game farms and one of the best game breeders in the country, gave several lectures upon pheasants. J. T. Quarles, secretary of the American Game Protective and Propagation Society is also giving lectures illustrated by lantern slides and motion pictures upon the subject of duck breedng.

The New York State Game Farm which is being established in connection with the college will soon be ready for stocking. Carpenters are working on the buildings and agricultural students are helping with the construction of shel-

(Continued on page 498)



The Alumni Association

DURING Farmers' Week some members of the Association proposed the plan whereby the former students may cooperate with the College in its effort to improve crops in New York State. This plan is to be coordinated with the extension organization at the College. Former students will be invited to make their farms local centers of seed selection, seed dissemination, where the College wishes to introduce improved varieties, and other methods of crop improvement. The President has appointed the committee in charge of this work which consists of F. P. Russell, Ithaca, Chairman; G. D. Brill, Bedford Hills and G. R. Schauber, Ballston Lake.

The President has also appointed a committee in charge of the Informal Reception and Dinner to be given during Farmers' Week 1919. This committee consists of R. A. Mordoff, Ithaca, Chairman; E. V. Hardenburg, Ithaca; and Miss Anna E. Hunn, Ithaca.

The Alumni Association offers a prize to be awarded at the close of the college course to that Senior who in the opinion of a Faculty committee appointed by the Dean has made the most of his or her advantages since entering the College of Agriculture to the end that he or she may be fitted for rural leadership. The prize is to be awarded on the basis of scholarship, efficiency in other undergraduate activities and character.

Annual dues of $1.00 are now payable and should be sent to F. W. Lathrop, Secretary-Treasurer, Cobleskill, N. Y.

In acknowledgment of a resolution adopted by the Alumni Association at the last annual meeting, Dr. Andrew D. White wrote as follows:

F. W. Lathrop, Esq.,
Secretary-Treasurer,
Cobleskill, N. Y.

My dear Mr. Secretary:

I have just received your kind message from the Alumni Association of the New York State College of Agriculture at Cornell University, and trust that you will allow me to acknowledge it with my most sincere thanks to the officers and members of the Associatation and to all who have had part or who have approved the action of which you convey to me the pleasant tidings.

I, perhaps, ought to say that I should have been present at the recent meetings of the body which sends me so kindly a greeting but for the fact that necessary care of my health at my present age, eighty-six years, obliges me to remain under my doctor's care frequently when I would rather obey my own wishes.

With every good wish for all of you, and with renewed thanks to all concerned for the kindness of your communication, I remain, my dear sir,

Most respectfully and sincerely yours,

Andrew D. White

'74, B. S.—At a meeting held on March 19, the Academy of Natural Sciences elected Professor John H. Comstock one of its correspondents.

'90, Sp.—Holley P. Matthews is on his own farm at Albion. He keeps a herd of Jersey cattle.

'98, B. S.—Ernest M. Bull is now in charge of the clearance of ships in the New York Harbor.

'98, B. S. A., '01, M. S. A.—Professor William A. Stocking is one of the four men of the committee which has just published a report on the problem of milk supply entitled, "What Is Meant by Quality in Milk?" It is now being distributed among the farmers of the country.

'99, B. S.—Joseph E. Ward has received a commission as 2nd Lieutenant in the aviation section, Signal Reserve Corps, and has been sent to Wilbur Wright Field, Fairfield, Ohio.

'07, B. S. A.—Scott H. Perky is secretary of the Cooperative League of America. The object of the League is to spread the knowledge of, and to give expert advice concerning all phases of consumers' cooperation. The offices of the League are at 2 West Thirteenth Street, New York City.

'07, W. C.—Truman J. Caldwell is on a small farm at Medina where fruit and dairying are combined. He is also keeping about 30 head of sheep.

'08, B. S. A., '10, M. S. A.—Professor M. C. Burritt, director of the extension service in the State Department of Agriculture and farm bureau leader, has been appointed a member of the State Advisory Committee controlling the manufacture, sale, and distribution of explosives used for any purpose. All makers or sellers, as well as users of explosives, must secure a Federal license, in addition to the existing state and municipal permits, according to instructions issued by the Department of the Interior.

'08, W. C.—H. W. Brooks is now living in Olean where he conducts a retail milk business and also works on his father's farm.

'09, B. S. A.—E. W. Mitchell immediately after leaving Cornell went on a fruit farm at Stuyvesant Falls. Mitchell now has a 167 acre farm, 150 acres of which are in apple and pear trees.

'01, B. S. A.—Gilbert M. Tucker, Jr., has been for the last year associated with the New York State Food Commission. Previous to last year Tucker had ten years of work on the Country Gentleman, and has been farming for the remaining six years. He now has a 60-acre farm just out of Albany, on which he raises principally Holstein cattle and Rhode Island Red chickens. Tucker may be addressed at Rockhill Farm, Glenmont, Albany, N. Y.

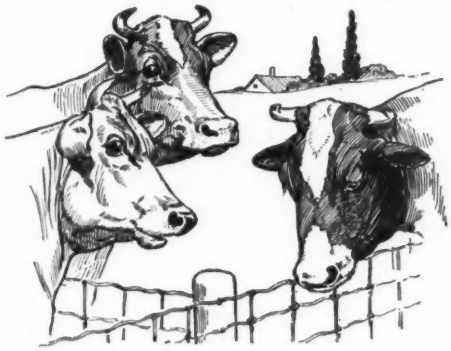
'11, B. S. A.—Professor G. B. Birkham since graduation, has been teaching farm management at the Baron De Hirsch Agricultural School, Peekskill. He also has a farm of 307 acres, on which he is carrying on experiments with tractors, tractor plows, harvesting tools and implements.

'13, B. S.—Mortimer I. Leonard is now instructing in the Department of Entomology, Gerard, Pennsylvania, Announcement was recently made of his engagement to Miss Doris G. Pratt of Ithaca.

'13, B. S.—Franz E. Geldenhuys arrived in South Africa on November 9, 1917. His address is P. O. Box 82, Johannesburg.

'13, W. C.—Mawin T. Foster owns a small farm at Hall where he keeps poultry and pigs. They now keep about 500 S. C. White Leghorns and the capacity is to be enlarged next season to 1000 fowls. Foster asserts that his poultry are very profitable even under the present day disadvantages.

'13, W. C.—Charles D. Smith is farming on the old homestead at Walworth.



IF COWS COULD TALK

"Good morning, Mrs. Fawncoat. I hear that all the cows in the county are joining the 'Win-the-War' Club."

"Yes, Mrs. Starface; Secretary of Agriculture Houston says we must increase the production of butter-fat, and we cows have all promised to do our 'bit'".

"There's one thing I want to say right now," spoke up Mrs. Black. "The farmers have got to back us up in this movement. I'm with the rest of you, heart and soul, but what chance have I got?"

"Why, Mrs. Black, what's the matter? You have a fine warm barn and plenty to eat and drink."

"Yes, I know; but what can I do as long as they use that old cream separator on the place? It never was any good, anyway, and now it wastes so much cream I'm just plain discouraged."

"Well, you're not so badly off as some cows, where they haven't any cream separator at all."

"I don't know about that. There's a lot of cream separators in this county that are only 'excuses'—not much better than none at all. I tell you, Mrs. Fawncoat, with butter at present prices and the people at Washington begging every one to save fat, it's almost a crime to waste butter-fat the way some of these farmers do."

"That's one thing I'm thankful for," said Mrs. Fawncoat, "there's no cream wasted on this farm. We have a De Laval Cream Separator and everybody knows that the De Laval is the closest skimming machine."

"Well," said Mrs. Starface, "we never used a De Laval on our place until last fall and supposed one separator was about as good as another; but, honest, the De Laval is the first cream separator we've ever had that gave us cows a square deal."

P. S.

Of course cows can't talk—but if they could, no cream producer would have a moment's peace until he stopped his cream loss by using a De Laval Cream Separator.

THE DE LAVAL SEPARATOR CO.

165 Broadway, New York **29 E. Madison Street, Chicago**

General farming is carried on and a small dairy kept. Experiments carried on with Soudan grass have proved it undesirable in this case at least.

'14, B. S.—William H. Upson is at Camp Greene, Charlotte, North Carolina, in Battery D. 13th Field Artillery.

'14, B. S.—Earl J. Brougham since graduation has been manager of two large farms, the latter being a 900 acre farm at Lyons Falls. Last February Brougham was appointed assistant county agent of Delaware county and since August has been acting as county agent with headquarters at Walton.

'14, B. S.—Harold W. Chadderdon is now in France with Company C, 1st Regiment, U. S. Engineers, American Expeditionary Forces.

'14, W. C.—Louis B. Bonnell has been working his father's farm since leaving Cornell. The farm is devoted to fruit and only a small amount of livestock is kept.

'15, B. S.—Charles M. Warren received a commission as first lieutenant in the Coast Artillery Corps at the R. O. T. C. Camp at Fort Winfield Scott, California. He is now in Battery F, 62nd Regiment, Coast Artillery Corps, Presidio of San Francisco, California.

'15, B. S.—Second Lieutenant Arthur W. Wilson, F. A. R. C., is now in Battery E. of the 129th Field Artillery which is now stationed at Camp Doniphan, Fort Sill, Oklahoma.

'15, B. S.; '15, M. F.—Franklin B. Fielding, quartermaster, 2nd class, U. S. N. R. F., is aboard the U. S. S. Emeline. Letters should be addressed to him in care of Postmaster, New York.

'16, B. S.—Florence M. Rice is "housekeeper" at the Pennsylvania Hospital, 4401 Market Street, Philadelphia.

'16, B. S.—Frederick R. Rogalsky, 1st Lieut. Infantry Reserve Corps, Camp Dix, New Jersey, has been transferred to the Aviation section. His new address is Signal Reserve Corps, Camp Dick, Dallas, Texas.

'16, B. S.—Edward W. Borst, a private of the 6th Battalion, 20th Engineers, is now in France.

'16, B. S.—John A. Vanderslice has been transferred to the 8th Provisional Ordnance Co., American Expeditionary Forces. He has secured the appointment of sergeant.

'16, B. S.—Ernest C. Woolver is now running a 17-acre poultry farm at Richfield Springs. Woolver has carried on extensive experiments in trapnesting as a means of improving the laying qualities of his birds. The total number of chickens, most of which are S. C. White Leghorns, on Woolver's place is 3,000. Besides caring for these birds he is running two 1,500 egg incubators for custom hatching and day old chick trade.

'17, B. S.—O. N. Eaton after graduation obtained the position as milk tester for the Lawyersville Dairy Improvement Association with headquarters at Cobleskill. Last January he entered the U. S. Department of Agriculture, Bureau of Animal Industry, Animal Husbandry Division.

'17, W. C.—Laurence E. Blakeman has enlisted in the U. S. Naval Aviation Corps. He is stationed at present at the Goodyear Flying Field, Fritz's Lake, Akron, Ohio.

'17, W. C.—Harold W. Wedge is living at Norwich where he works a small dairy farm with about twenty head of grade Holsteins.

Sp.—Frederich H. Thuyer since leaving Cornell at the closing of the summer course has been manager of the poultry department of J. Bolgiano & Son, Baltimore, Maryland.

Sp.—H. N. Wells after graduating from the winter course of 1907-1908, went on a farm for six years. For the last three years Wells has been county agricultural agent of Sullivan County, New Hampshire.

Book Reviews

Management and Feeding of Sheep, By Thomas Shaw, Professor of Animal Husbandry, University of Minnesota. Published by Orange Judd Co., New York. Price $2.00 net.

This is a remarkably concise and practical book, intended to meet the needs of the farmer, the flockmaster, and the student. The book covers every phase of management and is written in a flowing style, which makes it both easy and interesting reading and should be of especial interest to New York State farmers in view of the present high price of wool.

A Living from Eggs and Poultry, By H. W. Brown. Published by Orange Judd Co., New York. Price $.75 net.

This is a frank, straightforward statement of the author's experience in the poultry business. He is not a hopeless optimist, as are some poultry writers, but gives both sides of the question. It should appeal to the beginner who cannot help but profit from the mistakes Mr. Brown made in first beginning his career as a poultry man.

Poultry Diseases and Their Treatment, By E. J. Wortley, F. C. S. Published by Orange Judd Co., New York. Price $.75 net.

The author's aim has been to put a concise handbook into the hands of poultrymen, which will assist in determining the various diseases and the precautionary steps necessary to remedy them. Health and disease, common causes of disease, hygienic requirements, etc., are clearly and carefully discussed.

Vegetable Gardening, By R. L. Watts, Professor of Horticulture, Pennsylvania State College. Published by Orange Judd Co., New York. Price $1.75 net.

This is a complete, concise and authentic book covering every phase of vegetable gardening. The logical and systematic arrangement of the material makes the book valuable for students as well as busy commercial growers who need a well-organized treatise for frequent reference.

Marketing the New York's Surplus Poultry

(Continued from page 456)

Feast of Weeks, May 17. Best market days—May 13-15. Kinds most in demand—good fowls especially.

New Year, September 7-8. Best market days—September 2-5. Kinds most in demand—fowls, turkeys, ducks, and geese.

Day of Atonement, September 16. Best market days—September 10-14. Kinds most in demand—all prime stock, especially spring chickens and roosters.

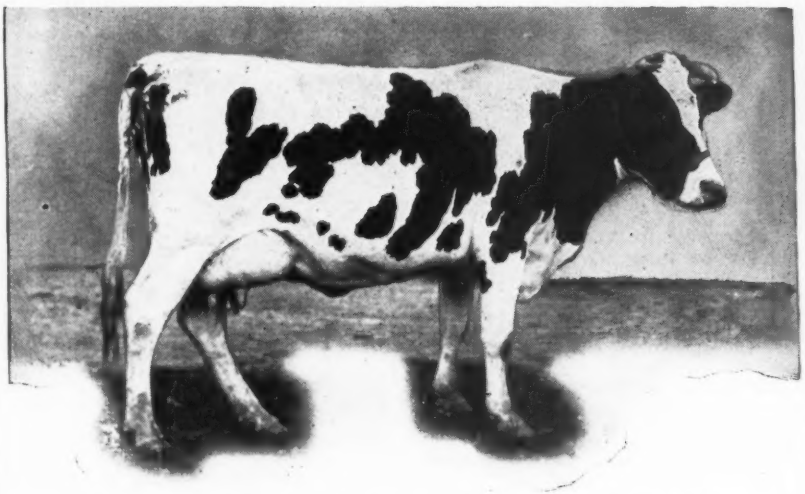
Feast of Tabernacles, September 21-22. Best market days—September 16-19. Kinds most in demand—fowls, ducks, and fat geese especially.

Feast of Law—September 28-29. Best market days—September 23-26. Kinds most in demand—prime quality of all kinds.

The time of the holidays vary somewhat from year to year, but a request sent to the poultry department of the New York State College of Agriculture, will bring the desired information.

The best time to sell fowls during this past season was during the latter part of August, all of September and the first week of October. This is typical of most years. If the fowls were not on the market and not sold before the end of the four Jewish holidays (New Year, Day of Atonement, Feast of Tabernacles, and Feast of Law), occurring during the past year in September and early October, a serious drop in the market was met; this drop was somewhat, but not entirely, overcome by the natural shortage of poultry during the late fall and winter.

Fat birds are preferred, as the fat is desired for culinary purposes. This is especially true of fowls; heavy deposits of fat in the abdomen increase the value of the birds two or three cents per pound. The fattening obtained by feeding grain, especially corn and confining the birds in pens or crates, produces more of the yellow fat so much liked, and also forms a hard flesh which does not shrink during



Senora Daisy De Kol 58816. In her 17th year and averaging 40 lbs. of milk per day.
Owned by M. B. & L. D. Upham, Georgetown, N. Y., P. O., Lebanon.

Weed Out Unprofitable Cows

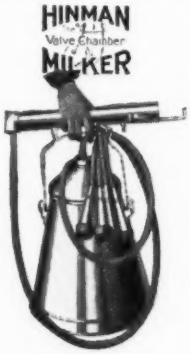
With the present cost of feed, it is necessary that you weed out unproductive cows. The sure way is to use the single unit

HINMAN MILKER

Individual Pump-Valve Chamber Milker

The single unit Hinman keeps each cows' milk separate. The operator handles 3 units (milking 3 cows at one time) and has ample time to weigh and keep record of production of each cow.

Speaking of the experiences and records of the Upham Herd of 26 cows that produce 800 to 900 lbs. daily, Mr. Upham writes:



10 year's Success
Over 3,300 sold

"The machine has saved us1 man during the year in our 26-cow dairy. Marjorie Spofford Korndyke in official test last year was averaging 24 lbs. of butter by hand milking; when changed to machine, she increased to 25.11 lbs. and showed a big gain in milk production. The Hinman has paid for itself many times over."

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shipment as badly as the flesh of milk-fattened birds.

The shrinkage of birds can be further avoided by using strong airy coops of such shape and size as to facilitate easy handling by the express employees. A spindle coop is much liked by the market-men, because it is strong, light in weight, airy, and allows the birds to eat from a trough which can be attached to the side of the coop, while they are being held for sale. These coops are rather expensive, and cannot be constructed on the farm. A good home-made substitute for this coop is one with a solid board bottom, slatted top, and upright slats on the side. One inch should be allowed between slats on the top and one and one-half to two inches on the sides. If a slatted coop is used, be sure that it is not too heavy to cause excessive express charges or not well ventilated to cause almost certain suffocation and serious shrinkage while enroute. It is well to arrange the door at one end or side as it makes it easier to remove the birds by tipping the coops. A home-made coop of wooden frame and poultry wire sides and top is very satisfactory.* Coops with solid board bottom and with sides and top constructed entirely of welded steel wire are also on the market, and when sealed with lead express seals should prove a very good protection against stealing.

The coops should be about two feet wide, three feet long, and one foot high inside, to be of service for both fowls and chickens, being of ample size for nine five-pound fowls or fifteen two-pound chickens. Two and one half-feet by four feet is a convenient shape for a larger coop, and will hold fourteen five-pound fowls or twenty-two two-pound chickens. It is well to place a wire partition across the center of this larger one to prevent crowding.

Coops of poultry should be shipped by express and not by freight. Be sure that

*Plans for the construction of such a coop may be obtained from the Poultry Department, New York State College of Agriculture, Ithaca, N. Y.

only healthy, vigorous birds are shipped, as weak birds will either die or shrink badly; they should be eaten at home or locally. Chickens and fowls should be shipped separately, unless the chickens are less than two pounds lighter than the fowls. Feed and water well just before shipment, and leave a small amount of grain in the coop when shipment is made, if the time of traveling is longer than twelve hours.

It is well to avoid shipping live poultry when the weather is warmer than 85°F. Always make shipments early in the week to avoid gluts on the market, and arrange the time of shipment so the birds are enroute during the night only, if possible.

Keeping Milk Cool

(Continued from page 459)

to good advantage. The ice and salt are mixed in a barrel and the brine mixture is pumped through the cooler and flows again into the barrel where it is cooled by the ice and salt and again pumped through the cooler. The pump should be connected with the bottom of the barrel so that the brine returning from the cooler will pass over all of the ice in the barrel. The outlet of the brine barrel should be protected with a wire screen to prevent small ice and dirt particles from being drawn into the pump. Since salt is corrosive to iron it is necessary to have a bronze lined pump, and the cooler must also be made of some material, such as turned copper, which is not corroded by salt.

In cooling milk, use should always be made of a thermometer to test accurately the temperature obtained. It is very easy to assume that certain temperatures are reached but on placing a thermometer into the cooling mixture or into the milk it will sometimes be found that the temperatures are not nearly as low as they were supposed to be.

Labor-Saving Farm Machinery

(Continued from page 461)

arated from the straw and chaff it is automatically weighed and sacked or else spouted into wagons or field grain bins. Meanwhile, a windstacker takes care of the straw, delivering it in any direction and with less labor involved than when a straw carrier is used.

The top-notch of advancement in harvesting machinery is, however, reached in the combined reaper and thresher, when the entire process is carried on as one continuous operation.

Tractors and their attachments have not been considered in this discussion as they form a class of farm machinery apart. It seems probable that the great future development will come in the adjustment of farm machinery from a horse-drawn to a tractor-operated basis.

On account of the great scarcity of farm labor and the necessity of doing everything in the most efficient manner possible to help with Democracy's war, it is imperative to study and improve every possible chance of bettering farm machinery or improving farming methods. One suggestion made along these lines is to use larger implements of all kinds and, when practicable, more of them at one time in order to conserve both time and labor.

Dairy Products Pure and Adulterated

(Continued from page 466)

be run in connection with the Babcock fat test for milk. After the milk is placed in the bottle a few drops of a solution of ferric chloride is added to the sample of milk. The regular amount of sulphuric acid is now added, which runs down the side of the bottle and under the milk. If formaldehyde is present, there will be at the junction a marked violet color, which will grow stronger after a few seconds, especially if the bottle be slightly rotated so as to get a slight mixture of the milk and acid. If no formaldehyde is present a deep reddish-brown

color is formed where the milk and acid meet.

Sometimes gelatin may be added to milk or cream as a thickener. The presence of gelatin may be detected as follows:

Dissolve one part by weight of mercury in two parts of concentrated nitric acid (sp. gr. .42) and dilute the solution to twenty-five times its bulk with water. Place 10 c. c. of this solution in a test tube with an equal amount of the milk or cream. Shake well and add 20 c. c. of water. Shake again, let stand five minutes and filter. If much gelatin is present the solution will come through cloudy or opalescent. To a little of this liquid in a test tube add an equal amount of a saturated solution of picric acid. If the solution remains perfectly clear, gelatin is absent. Small amounts give a cloudiness, larger ones a yellow precipitate.

Cheese Moisture Test

The part of the New York State law relating to the amount of moisture to be allowed in cheese reads as follows:

"Cheese known as cheddar cheese, cheddar style cheese, twin cheese, flats, daisies, daisy twins, and young Americans containing more than thirty-nine per cent of moisture shall be deemed to

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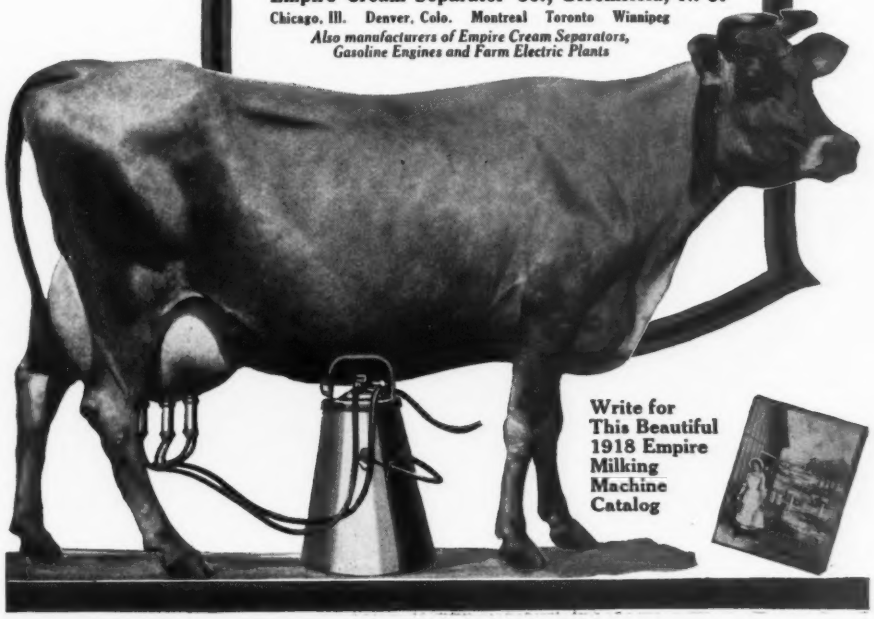

Write for This Beautiful 1918 Empire Milking Machine Catalog

be adulterated and when sold, offered or exposed for sale shall be branded or marked conspicuously with the words 'adulterated cheese.' Such branding shall be upon the sides of both the cheese and the container. The branding herein provided shall be in black letters at least one-half an inch square.

A representative sample of the cheese is obtained, placed in a glass jar and cut into particles about the size of kernels of wheat without removing it from the jar. Five grams of the prepared cheese are then weighed out in the flask. The flask is then placed in the bath and held at a temperature between 140° and 145°C. (or between 284° and 293°F.) for fifty minutes. The flask is then removed, covered and allowed to cool to room temperature in a dry place. It is then weighed, and the quotient, obtained by dividing the loss in weight by the original weight, multiplied by 100, gives the percentage of water in the cheese.

Butter Moisture

The Federal law states that butter containing sixteen or more per cent of moisture is considered adulterated. The percentage of moisture in a sample of butter may be determined as follows:

A representative sample is first secured from the butter to be tested. This is placed in a convenient jar where it can be properly mixed so as to get a uniform distribution of the moisture, salt, fat, etc. Ten or twenty grams of this sample is then weighed out in an aluminum cup. This is heated over a flame until the moisture is driven off. This is indicated by the appearance of the butter. When all of the moisture is driven off the butter turns brown. The cup is then cooled and reweighed and the loss of moisture is calculated in terms of per cent.

Methods of Distinguishing Renovated Butter and Oleomargarine From Butter

1. Melt some of the substance in a spoon by holding it over a small flame. Let the melted fat boil vigorously. Renovated butter and oleomargarine snap

CORNELL UNIVERSITY ATHLETIC ASSOCIATION

BASEBALL SCHEDULE
1918

Fri.	Apr.	12—Lafayette at Ithaca
Sat.	"	13—U. S. Aviation School at Ithaca
Wed.	"	17—Colgate at Ithaca
Fri.	"	19—Rutgers at New Brunswick
Sat.	"	20—Columbia at New York
Tue.	"	23—Colgate at Ithaca
Fri.	"	26—U. S. A. A. S. at Allentown
Sat.	"	27—Yale at New Haven
Tue.	"	30—Columbia at New York
Wed.	May	1—Army at West Point
Sat.	"	4—U. S. A. A. S. at Ithaca
Wed.	"	8—Columbia at Ithaca
Sat.	"	11—Pennsylvania at Ithaca
Tue.	"	14—Niagara at Ithaca

and sputter with noise while boiling and very little, if any, foam is formed. In boiling, butter makes little noise and a large amount of foam forms.

2. On melting butter and allowing the casein and water to settle a transparent oil results. With oleomargarine or renovated butter, the oil remains cloudy.

Campus Notes

(Continued from page 478)

ters for the birds. The farm consists of 166 acres on Cascadilla Creek east of the present University farm. It will be supervised by the poultry department with suggestions from the New York State Conservation Committee.

The farm is to be stocked with several varieties of pheasants and ducks, also Canada geese and Bob White quail. The shipment of stock is expected soon from Connecticut and is the gift of the American Game Protective Association. The plan is to turn out as large a variety of material as is feasible for laboratory work in game propagation next year and also to aid in restocking the coverts of the state.

Professor W. A. Stocking of the Dairy Department recently made a report, in conjunction with three other Agricultural Professors, on the problem of the quality milk to the American Dairy Science Association. His report was the result of several years investigation most of which was carried on at Cornell. The report is to be circulated among the farmers as a bulletin entitled, "What Is Meant by Quality in Milk?"

Professor W. A. Riley, of the department of entomology, has been made a member of the Committee on Medical Zoology of the National Research Council. The committee of nine is divided into three groups, those of Entomology, Protozoology, and Helminthology, in the first of which Professor Riley will serve.

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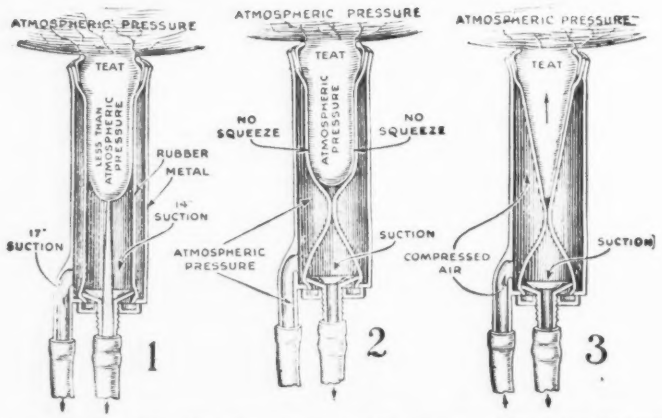

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2. Suction is shut off. Atmospheric pressure inside and outside teat, consequently *no squeeze* or massage can result. This is as far as other milkers go, because Sharples basic patents control use of compressed air.

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gives in addition a *positive* "Upward Squeeze," for this reason: Drawing the milk from the udder down thru the teat, also draws blood from the veins of the udder down into the smaller veins of the teat. It is necessary that something shall keep massaging this blood back from the teat, to avoid congestion and to insure a healthy condition of the teat. The comfortable "Upward Squeeze" of the Sharples Milker does this.

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